

Heaps

1. Read
 - a. The lab handout
 - b. Chapter 13
2. Finishing up Traversal: Level (breadth-first) Order Traversal
 - a. Slowly but simply with recursion
 - b. Cleverly and elegantly without recursion
3. Kinds of binary trees
 - a. Full =
 - b. Complete =
 - c. Balanced =
 - d. Heap
 - i. Min-heap
 - ii. Max-heap
 - iii. Example: Put the following into complete min and max heaps: 1 3 3 4
- 4. Priority Queue Data Structure**
- 5. A complete heap (or any binary tree) can be stored in a vector**
6. What are the space savings of the vector representation?
 - a. Assume empty Object takes 8 bytes
 - b. Pointers cost 4 bytes
 - c. Integer costs 16 bytes

```
public class Node<T> {  
    private T value;  
    private Node<T> parent;  
    private Node<T> left;  
    private Node<T> right;  
}
```

T[]

Catch:

7. Heap.add
8. Heap.removeMin